laria oryzae), *Pythium* spp. (e.g. *Pythium ultimum*), *Rhincosporium secalis, Rhizoctonia* spp. (e.g. *Rhizoctonia solani, Rhizoctonia oryzae* or *Rhizoctonia cerealis*), *Rhizopus* spp. (e.g. *Rhizopus chinensid*), *Scerotium* spp. (e.g. *Scerotium rolfsil*), *Sclerotinia* spp. (e.g. *Sclerotinia sclerotiorum*), *Septoria* spp. (e.g. *Septoria lycopersici, Septoria glycines, Septoria nodorum* or *Septoria tritici*), *Thielaviopsis* spp. (e.g. *Thielaviopsis basicola*), *Tilletia* spp., *Trichoderma* spp. (e.g. *Trichoderma virde*), *Uncinula* spp. (e.g. *Uncinula necator*), *Ustilago maydis* (e.g. *corn smut*), *Venturia* spp. (e.g. *Venturia inaequalis* or *Venturia pirina*) or *Verticillium* spp. (e.g. *Verticillium dahliae* or *Verticillium albo-atrum*);

[0121] (2) a fungal cell of, or a cell derived from a fungus capable of infesting humans such as, but not limited to, *Candida* spp., particularly *Candida albicans*; Dermatophytes including *Epidermophyton* spp., *Trichophyton* spp, and *Microsporum* spp.; *Aspergillus* spp. (particularly *Aspergillus flavus, Aspergillus fumigatus, Aspergillus nidulans, Aspergillus niger* or *Aspergillus terreus*); *Blastomyces dermatitidis; Paracoccidioides brasiliensis; Coccidioides immitis; Cryptococcus neoformans; Histoplasma capsulatum* Var. *capsulatum* or Var. *duboisii; Sporothrix schenckii; Fusarium* spp.; *Scopulariopsis brevicaulis; Fonsecaea* spp.; *Penicillium* spp.; or *Zygomycetes* group of fungi (particularly *Absidia corymbifera, Rhizomucor pusillus* or *Rhizopus arrhizus*);

[0122] (3) a fungal cell of, or a cell derived from a fungus capable of infesting animals such as, but not limited to *Candida* spp., *Microsporum* spp. (particularly *Microsporum canis* or *Microsporum gypseum*), *Trichophyton mentagrophytes, Aspergillus* spp., or *Cryptococcus neoforman;*

[0123] and

[0124] (4) a fungal cell of, or a cell derived from a fungus that causes unwanted damage to substrates or materials, such as fungi that attack foodstuffs, seeds, wood, paint, plastic, clothing etc. Examples of such fungi are the moulds, including but not limited to *Stachybotrys* spp., *Aspergillus* spp., *Alternaria* spp., *Cladosporium* spp., *Penicillium* spp. or *Phanerochaete chrysosporium.*

[0125] II. Identification of Target Sequences

[0126] The present invention provides a method for identifying and obtaining a nucleic acid comprising a nucleotide sequence for producing a dsRNA or siRNA. For example, such a method comprises: (a) probing a cDNA or genomic DNA library with a hybridization probe comprising all or a portion of a nucleotide sequence or a homolog thereof from a targeted pest; (b) identifying a DNA clone that hybridizes with the hybridization probe; (c) isolating the DNA clone identified in step (b); and (d) sequencing the cDNA or genomic DNA fragment that comprises the clone isolated in step (c) wherein the sequenced nucleic acid molecule transcribes all or a substantial portion of the RNA nucleotide acid sequence or a homolog thereof.

[0127] Additionally, the present invention contemplates a method for obtaining a nucleic acid fragment comprising a nucleotide sequence for producing a substantial portion of a dsRNA or siRNA comprising: (a) synthesizing first and a second oligonucleotide primers corresponding to a portion of one of the nucleotide sequences from a targeted pest; and (b) amplifying a cDNA or genomic DNA template in a cloning vector using the first and second oligonucleotide primers of step (a) wherein the amplified nucleic acid molecule transcribes a substantial portion of a dsRNA or siRNA of the present invention.

[0128] In practicing the present invention, a target gene may be derived from any pest that causes damage to another organism. Several criteria may be employed in the selection of preferred target genes. The gene is one whose protein product has a rapid turnover rate, so that dsRNA inhibition will result in a rapid decrease in protein levels. In certain embodiments it is advantageous to select a gene for which a small drop in expression level results in deleterious effects for the recipient pest. If it is desired to target a broad range of insect species, for example, a gene is selected that is highly conserved across these species. Conversely, for the purpose of conferring specificity, in certain embodiments of the invention, a gene is selected that contains regions that are poorly conserved between individual insect species, or between insects and other organisms. In certain embodiments it may be desirable to select a gene that has no known homologs in other organisms.

[0129] As used herein, the term "derived from" refers to a specified nucleotide sequence that may be obtained from a particular specified source or species, albeit not necessarily directly from that specified source or species.

[0130] In one embodiment, a gene is selected that is expressed in the insect gut. Targeting genes expressed in the gut avoids the requirement for the dsRNA to spread within the insect. Target genes for use in the present invention may include, for example, those that share substantial homologies to the nucleotide sequences of known gut-expressed genes that encode protein components of the plasma membrane proton V-ATPase (Dow et al., 1997; Dow, 1999). This protein complex is the sole energizer of epithelial ion transport and is responsible for alkalinization of the midgut lumen. The V-ATPase is also expressed in the Malpighian tubule, an outgrowth of the insect hindgut that functions in fluid balance and detoxification of foreign compounds in a manner analogous to a kidney organ of a mammal.

[0131] In another embodiment, a gene is selected that is essentially involved in the growth, development, and reproduction of an insect. Exemplary genes include but are not limited to the structural subunits of ribosomal proteins and a beta-coatamer gene, CHD3 gene. Ribosomal proteins such as S4 (RpS4) and S9(RpS9) are structural constituents of the ribosome involved in protein biosynthesis and which are components of the cytosolic small ribosomal subunit, the ribosomal proteins such as L9 and L19 are structural constituent of ribosome involved in protein biosynthesis which is localised to the ribosome. The beta-coatamer gene in *C. elegans* encodes a protein which is a subunit of a multimeric complex that forms a membrane vesicle coat Similar sequences have been found in diverse organisms such as *Arabidopsis thaliana, Drosophila melanogaster*, and *Saccharomyces cerevisiae*. Related sequences are found in diverse organisms such as *Leptinotarsa decemlineata, Phaedon cochleariae, Epilachna varivetis, Anthonomus grandis, Tribolium castaneum, Myzus persicae, Nilaparvata lugens, Chilo suppressalis, Plutella xylostella* and *Acheta domesticus*. Other target genes for use in the present invention may include, for example, those that play important roles in viability, growth, development, reproduction, and infectivity. These target genes include, for example, house keeping genes, transcription factors, and insect specific genes or lethal knockout mutations in *Caenorhabditis* or *Drosophila*. The target genes for use in the present invention may also be those that are from other organisms, e.g., from a nematode (e.g., *Meloidogyne* spp. or *Heterodera* spp.), other insects or arach-